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(71)Applicant : DOWA MINING CO LTD

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(72)Inventor : SUZUKI KAZUNARI

TSUKAGUCHI NOBUYOSHI

NAGATA CHOJU

(54) TIN-DOPED OXIDE INDIUM POWDER AND ITS MANUFACTURE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide transparent conductive powder exhibiting higher conductivity in a high transparency region, and to provide a manufacturing method thereof not needing firing in a strong reducing atmosphere as in the past.

SOLUTION: This tin-doped oxide indium powder comprises powder having an Sn content of 0.1 to 30 wt.% in terms of SnO₂, a specific surface area of 15 m²/g or more, and grain sizes ranging from 10 to 30 nm, and exhibits specified color tone, crystallinity, volume solid resistivity, and zeta-potential. In this method, a bivalent soluble tin compound, in particular, is used for a starting tin material for doping, an ammonium carbonate is added to, and mixed with a mixed acidic liquid of the tin compound and an indium compound, thereby obtaining a coprecipitation hydroxide, which is fired in a nitrogen atmosphere while humidity is adjusted, and the fired material is pulverized to obtain powder.

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CLAIMS

[Claim(s)]

[Claim 1] Tin dope indium oxide powder with which Sn content is characterized by color tones being x values of 0.280-0.370, and y value of 0.316-0.400 on xy chromaticity diagram at 0.1 - 30 % of the weight by SnO₂ conversion.

[Claim 2] Tin dope indium oxide powder characterized by the F-potential which Sn content measured in 0.01molKCl water solution at 0.1 - 30 % of the weight by SnO₂ conversion being +5mV or more.

[Claim 3] Tin dope indium oxide powder with which specific surface area is characterized by the rate of volume resistivity being below 3×10^1 -ohmcm in the condition of the green compact which the Maine peak half peak width near $2\theta = 30.5$ degree fabricated [particle size / 10-30nm] by the pressure of 200kg/cm² by 0.2 degrees - 0.7 degrees on the X diffraction Fig. above 15m²/g.

[Claim 4] The manufacture approach of the tin dope oxidation Inn Jim powder characterized by making it back-dry and calcinating this coprecipitation hydroxide at 500-800 degrees C by the inert gas ambient atmosphere containing moisture which the ammonium carbonate was added [ambient atmosphere] to the acidic solution which dissolved an indium and divalent tin, and made it generate the coprecipitation hydroxide of an indium and tin.

[Claim 5] The manufacture approach of the tin dope indium oxide powder according to claim 4 characterized by supply of the inert gas ambient atmosphere containing said moisture being a flow rate more than 1.0 ml/min-g (per-minute amount of supply per 1g of desiccation coprecipitation hydroxides).

[Translation done.]